

REMARKS

Entry of this Amendment is proper under 37 C.F.R. § 1.116, because the Amendment places the application in condition for allowance for the reasons discussed herein; does not raise any new issue requiring further search and/or consideration, because the amendments amplify issues previously discussed throughout prosecution; relates to matters of form rather than substance, because the added language was already present in the claims and thus presents no additional search burden; adds no new claims; and places the application in a better form for an appeal should an appeal be necessary. The Amendment is necessary and was not earlier presented because it is made in response to arguments raised in the final rejection. Entry of the Amendment, reexamination, and further and favorable reconsideration of the subject application in light of the following remarks, pursuant to and consistent with 37 C.F.R. § 1.116, are thus respectfully requested.

1. Status of the Claims

The status of the claims following entry of the amendment is as follows:

Claims canceled:	1-27 and 34-50
Claims pending:	28-33 and 51-52
Claims rejected:	28-33 and 51-52
Claim amended:	29

2. Support for the Amendments

Applicants amend claim 29 to more precisely recite the claimed subject matter. Support for the claim amendments can be found at least from previously presented claims 29 and 32. Applicants do not believe that the amendments add prohibited subject matter that is unsupported by the Specification as filed.

The claims have been amended without prejudice to, or disclaimer of, the canceled subject matter. Applicants reserve the right to file a continuation or divisional application on any subject matter canceled by way of amendments.

3. **Withdrawn Objections and Rejections**

Rejections and objections not reiterated stand withdrawn. *See* 37 C.F.R. § 1.113(b); M.P.E.P. §§ 706.07 and 707.07(e).

4. **Rejection Under 35 U.S.C. § 112, second paragraph**

The Office rejects claims 29, 32-33, and 51 under 35 USC § 112, second paragraph, as allegedly indefinite. Office Action, page 3. The Office alleges that the recitation “passing the aqueous extract of tea leaves through the column filled with the activated charcoal in an amount at least 3 times greater than the capacity of the column” renders the claims indefinite. *Id.* This claim element allegedly can be interpreted in at least two ways: (1) “the aqueous extract of tea leaves are used in an amount at least 3 times greater than the capacity of the column”; and (2) “the activated charcoal is used in an amount at least 3 times greater than the capacity of the column.” *Id.*¹

As amended, claim 29 recites *inter alia* “passing the aqueous extract of tea leaves through the column in an amount at least 3 times greater than the capacity of the column.” The recited “amount at least 3 times greater than the capacity of the column” refers to the volume of the aqueous extract of tea leaves. The Office’s rejection is thus mooted. Applicants respectfully request withdrawal of the rejection and allowance of the claims.

5. **Rejection Under 35 U.S.C. § 103(a)**

The Office rejects claims 28-33 and 51-52 under 35 U.S.C. § 103(a) as allegedly obvious over **Seto** et al., JP 08-109178 (“Seto”) in view of **Green** et al., EP 0040712 (“Green”). Office Action, page 4.

¹ Applicants disagree with the Office as to the claim interpretation. Claim 29 recites *inter alia* “filling a column with an activated charcoal.” ***A column cannot be filled with the activated charcoal in an amount more than the column’s volume.*** A skilled artisan would have understood that the recited “amount at least 3 times greater than the capacity of the column” thus refers to the volume of the aqueous extract of tea leaves. Accordingly, the Office’s second interpretation, “the activated charcoal is used in an amount at least 3 times greater than the capacity of the column,” is unsubstantiated. Nevertheless, to expedite prosecution, Applicants amend claim 29 to more precisely recite the claimed subject matter.

Grounds For Rejection

Seto allegedly teaches the following:

- (1) dissolving 10 grams of green tea extract in 20 mL water and applying it to a glass column packed with 300 mL of a synthetic adsorbent SP-207;
- (2) eluting the column with 1500 mL of a buffer solution at pH 10; and
- (3) concentrating and dry the fraction.

Id., at 4-5. The Office admits that Seto does not “expressly disclose the temperature of the aqueous liquid as 50°C, or wherein the adsorbent is activated charcoal.” *Id.*, at 5.

Green allegedly teaches “a method of removing caffeine from coffee comprising contacting an aqueous solution of the coffee with activated carbon at a temperature of 60°C to 90°C.” *Id.* Caffeine is allegedly absorbed on the activated carbon in Green’s method. *Id.*

The Office apparently applies Green to cure Seto’s deficiencies, asserting “[i]t would have been obvious at the time the invention was made to purify oolong tea [by combining Seto and Green], wherein an aqueous liquid comprising oolong tea extract is contacted with activated charcoal at a temperature of at least 50°C.” *Id.*

Arguments

Applicants traverse. “[O]bviousness requires a suggestion of *all* limitations in a claim.” *CFMT, Inc. v. Yieldup Int’l Corp.*, 349 F.3d 1333, 1342, 68 U.S.P.Q.2d 1940, 1947 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985, 180 U.S.P.Q. 580, 583 (C.C.P.A. 1974) (emphasis added)). To establish *prima facie* obviousness using a combination of multiple references, the Office must show that the combination or modification must have had expected and predictable results. *See* M.P.E.P. § 2143.

A. The Office Fails To Adduce *Prima Facie* Obviousness

First, the Office’s rejection is unsupported, because the Office fails to justify that a skilled artisan would have been motivated to combine Seto and Green, let alone the combination of Seto and Green would have provided expected and predictable results. Seto at best may teach a method of manufacturing low-caffeine tea polyphenol by bringing a tea extract “into contact with a synthetic adsorbent under an alkaline condition to adsorb and remove caffeine.” *See* Seto,

Abstract. Green may teach removing caffeine from green coffee beans to either prepare decaffeinated coffee or recover caffeine. *See* Green, page 2. A tea extract differs from green coffee beans or coffee bean extracts at least regarding the composition. The two references, by using different methods and materials to obtain different products, solve different problems. There is no guidance provided by either Seta or Green to solve the problem—producing a composition rich of polymerized catechins from a tea extract by having both non-polymerized catechins and caffeine selectively removed—which is solved by the presently claimed method. Applicants submit that it is not permitted in an obviousness analysis to pick and choose between all the options and teachings presented by each of the references to arrive at the combination of limitations as presented in the claims. *See e.g., AKZO N.V. v. United States Int’l Trade Comm’n*, 808 F.2d 1471, 1781, 1 U.S.P.Q.2d 1241, 1246 (Fed. Cir. 1986) (one “cannot pick and choose among individual parts of assorted prior art references as a mosaic to recreate a facsimile of the claimed invention.”).

The inventors newly discovered that the presently claimed methods selectively remove non-polymerized catechins. *See* ¶ [0008] of the Specification.² Applicants submit that obviousness cannot be proven merely by showing that a parameter in a method or process, for example, temperature, could have been modified by routine experimentation. The Office must provide evidence or a rationale of why a skilled artisan would have had some apparent reason to modify the process in a way that would result in the claimed process. *See e.g. Ex parte Whalen*, 89 U.S.P.Q.2d 1078, 1084 (Bd. Pat. App. & Int. 2008) (precedential). In the present application, there is no evidence on the record or adduced by the Office that a skilled artisan would have had some apparent reason to apply Green’s methods (for processing green coffee beans or coffee extract) on Seto’s tea extracts, specifically at the recited temperature range and using the recited absorbent (activated charcoal), let alone that such modification(s) would have worked.

² “[0008] It has been known that a variety of ingredients in tea can be separated by various resins. For instance, it has been known that detanning and decaffeination are possible by treating with activated charcoal. However, *there has not been known any effective method that can selectively separate polymerized catechins from non-polymerized catechins by means of an adsorbent such as activated charcoal or an adsorbing resin.*” (emphasis added)

B. The Claimed Methods Offer Unexpected Advantages

Furthermore, the presently claimed methods offer unexpected advantages that are not taught or suggested in the cited references. The tea leaves contain various types of catechins, *e.g.*, epicatechin, epigallocatechin, epicatechin gallate (ECG), and epigallocatechin gallate (EGCG), as ***non-polymerized*** polyphenols. *See* English translation of Iwata, 27 JOURNAL OF KAGAWA NUTRITION COLLEGE 11 (1996) (submitted May 6, 2008, in an Information Disclosure Statement). During the fermentation process, non-polymerized catechins in the tea leaves become oxidized through the action of the polyphenol oxidase enzymes, resulting in ***polymerized*** catechins. *Id.*; *see also* “Tea and Chronic Disease Prevention,” *available at* <http://lpi.oregonstate.edu/f-w02/tea.html>. Polymerized catechins exhibit various beneficial effects while having a more desirable taste (*e.g.*, less astringent and bitter) than non-polymerized catechins. *See, e.g.*, Technical Field of the Specification. By selectively removing both ***non-polymerized*** catechins and caffeine from a tea extract, the presently claimed methods result in a composition rich of ***polymerized*** catechins. *See* Abstract and Example 2 of the Specification. Neither Seto nor Green teaches such advantages.

Seto may teach a method of manufacturing low-caffeine tea polyphenols by processing a green tea extract. *See* Seto, Abstract and Example 1. However, Seto’s “tea polyphenols” refer to the ***non-polymerized*** catechins, because the green tea used in Seto is a non-fermented tea. In Seto’s process, caffeine is absorbed in the column, while non-polymerized catechins are eluted as the desired products. *Id.* Thus, Seto does not teach separating polymerized catechins from non-polymerized catechins. Nor does Seto’s process result in a composition rich of ***polymerized*** catechins. Green, as the secondary reference, does not teach any tea extract, let alone tea polyphenols. Green may teach removing caffeine from green coffee beans. *See* Green, page 2. However, neither reference teaches, suggests, or provides motivation to separate polymerized catechins from non-polymerized catechins from a tea extract. The separation of non-polymerized catechins and polymerized catechins provides a product containing enriched polymerized catechins while having a more desirable taste. Thus, the presently claimed methods offer at least these unexpected advantages.

The Office discounts the unexpected results, alleging that “[s]electively removing non-polymerized catechins is the intended result of the positively recited steps and do not have patentable weight.” Office Action, page 8. Applicants disagree. Selective removal of non-polymerized catechins and caffeine (*i.e.*, “wherein the composition has a higher ratio of the polymerized catechins to the non-polymerized catechins”) is actually one of the properties of the resulting product by practicing the presently claimed methods.

Given at least the above arguments, the Office is respectfully requested to reconsider given the unexpected advantages of the presently claimed methods.

C. The Office Improperly Discounts Evidence of Teaching Away

Applicants further submit that **Suehiro et al.**, JP 06-009607 (“Suehiro”) teaches away from the presently claimed methods. The present claims are directed to a method of producing a composition rich of polymerized catechins by *having both non-polymerized catechins and caffeine* selectively adsorbed (and ultimately removed). In contrast, Suehiro is directed to a method of collecting non-polymerized catechins by *having only non-polymerized catechins selectively adsorbed*—thus caffeine is selectively and separately removed. *See id.* Example 5 of Suehiro describes obtaining a “manufactured crude tea catechins” composition having 5 wt% caffeine after washing the column with 1.5 L distilled water and 3.5 L of hot water (90°C). *See* Suehiro, ¶¶ [0195]-[0196]. Comparative Example 3 of Suehiro describes obtaining a “manufactured crude tea catechins” composition having 18 wt% of caffeine after washing the column with 4.5 L of hot water (40°C). *See id.*, ¶ [0202]. These results suggest that caffeine is more likely to be eluted at a higher temperature. Since caffeine, together with non-polymerized catechins, is intended to be absorbed on the column in the presently claimed methods, a skilled artisan given the teaching of Suehiro would have avoided a high temperature, *e.g.*, “at least 50°C” as presently recited, during the contacting step.

The Office discounts the teaching-away arguments. The Office asserts that (1) the anticipation rejection over Suehiro has been withdrawn; and (2) “arguing that a reference teaches away is not a proper rebuttal to overcome anticipation,” because “Suehiro was applied under 35 U.S.C. §102 only.” Office Action, page 8.

Applicants disagree. First, Applicants cite Suehiro to rebut the obviousness rejection, *not* the anticipation rejection. Second, the withdrawal of the anticipation rejection over Suehiro does not prevent Applicants from applying Suehiro as a teaching-away reference. Suehiro at least reflects the knowledge in the art at the time. Accordingly, the Office is respectfully requested to reconsider in view of the teaching away by Suehiro.

Given at least these arguments, claims 28-33 and 51-52 are nonobvious over cited references. Accordingly, Applicants respectfully request withdrawal of the rejection and allowance of the claims.

CONCLUSION

Should the Office have any questions or comments regarding Applicant's amendments or response, please contact Applicant's undersigned representative at (202) 230-5438. Furthermore, please direct all correspondence to the below-listed address.

In the event that the Office believes that there are fees outstanding in the above-referenced matter and for purposes of maintaining pendency of the application, the Office is authorized to charge the outstanding fees to Deposit Account No. 50-0573. The Office is likewise authorized to credit any overpayment to the same Deposit Account Number. If an Appeal fee is required to maintain pendency of the present application, the Office is authorized to charge the Appeal fee to the deposit account above and use this paper as a constructive Notice of Appeal.

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Respectfully submitted,

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